

oxynitride gate dielectric layer. It is Applicants' understanding that Gardner et al fails to disclose the invention specified in claims 1-6.

It is Applicants' understanding that a nitridized hydroxy-silicate layer is different than Gardner et al's disclosed silicon oxynitride gate dielectric layer 30. Primarily, the composition of Gardner et al's silicon oxynitride can be readily determined as opposed to that of Applicants' nitridized hydroxy-silicate because deposition has a different effect on material properties than chemical passivation and subsequent nitridation processes. Most notably, Applicants' nitridized hydroxy-silicate layer can be described as a nitrogen-rich silicate layer with significantly better electrical and composition differences than Gardner et al's silicon oxynitride gate dielectric layer 30. Specifically, Applicants' nitridized hydroxy-silicate layer exhibits lower gate leakage, richer nitrogen content, and more scalable dimensions. It is therefore Applicants' understanding that the claimed nitridized hydroxy-silicate layer is significantly different than Gardner et al's silicon oxynitride gate dielectric layer 30.

In *In re Thorp*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985) the court decided that the determination of patentability of product-by-process claims is based on the product itself, such that the product is different from the prior art. Applicants' believe and have disclosed the major differences between Gardner et al's silicon oxynitride gate dielectric layer 30 and Applicants' nitridized hydroxy-silicate layer. Therefore, it is Applicants' understanding that this invention is different than the prior art.

It is Applicants' understanding that it is necessary to claim this invention by disclosing its method and process of formation. Although the disclosed nitridized hydroxy-silicate layer has similar characteristics to deposited silicon oxynitride, the exact structure is difficult to define. The results of the post nitridation is a nitrogen rich silicate. The nitrogen to oxygen ratio is hard to characterize but could include oxynitride compounds up to the end member  $\text{Si}_3\text{N}_4$ . Also, the invention disclosed has a thickness on the order of angstroms which makes structural characterization difficult. As such, because it is difficult to precisely define the structure of Applicant's film, it is necessary to define the film by its method of fabrication.

It is therefore Applicants' understanding that Gardner et al fails to disclose the invention specified in claim 1. Thus, claims 2-6 should be made valid upon the validity of base claim 1.

### Conclusion

Applicants believe that all claims pending are now in condition for allowance so such action is earnestly solicited at the earliest possible date.

If there are any additional charges, please charge Deposit Account # 02-2666. If a telephone interview would in any way expedite the prosecution of this application, the Examiner is invited to contact the undersigned at (408) 720-8300.

Respectfully submitted,

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